

Celastrus orbiculatus

Identification

Oriental or Asiatic Bittersweet (*Celastrus orbiculatus*) is a deciduous woody vine that climbs by means of twining about a support. Branches are smooth, light to darker brown, usually with noticeable lenticels. Axillary buds are 1-3 mm, rounded, with outer scales sometimes becoming spine-like. Leaves are smooth, alternate in arrangement and extremely variable in size and shape, from broadly oblong-obovate to suborbicular, 2 -12 cm long and 1.5 to 8 cm wide. Leaf margins are toothed and leaf tip is pointed to rounded. Petioles are 1-3 cm long. Leaves turn bright yellow in autumn, the time when infestations of this vine are most noticeable.

Plants are usually dioecious, with male and female flowers on separate plants. Flower clusters are axillary cymes, usually containing 3 - 7 flowers. However clusters are sometimes terminal in male plants. Flowers are small, greenish-yellow. Sepals and petals are both 5. Male flowers contain 5 stamens about as long as petals and inserted at edge of cup-shaped disk around a vestigial pistil. Female flowers have vestigial stamens, a 3-lobed stigma, columnar style and well a developed superior ovary, sometimes imbedded in a disk. Occasional vines develop both unisexual and perfect flowers and monoecious plants, ie. with both male and female flowers on the same vine have also been reported.

Fruit are round capsules 6 to 8 mm in diameter which change in color from green to bright yellow. Capsules are three-valved with each chamber containing one or two brown seeds completely enclosed in a fleshy red aril. Upon ripening in autumn, the yellow outer covering splits open to reveal the red aril, thus presenting a brightly bicolored "dispersal flag". Fruit are born in clusters of 3 - 7 in the axils of leaves. *Celastrus orbiculatus* fruit are never arranged in terminal clusters.

The outer surface of roots are characteristically bright orange.

Similar Species

Oriental Bittersweet can only be reliably distinguished from the native American Bittersweet (*Celastrus scandens*) by the location of female flowers and fruit. These are uniformly axillary cymes in *C. orbiculatus* and terminal panicles of numerous flowers or fruit in *C. scandens*. A second difference is the yellow color of the outer fruit covering in *C. orbiculatus* vs. the orange color of *C. scandens* outer fruit cover. The color of the inner aril is red in both species. Identification by leaf shape or size, or by male flower cluster location is not reliable.

Origin, Habitat and Current Range

Oriental Bittersweet is originally from Asia, where it is widely distributed in northern and central Japan and Korea. In China it is found primarily in provinces north of the Yangtze River. It was introduced to eastern North America, presumably as an ornamental,

sometime before 1879. Its North American habitat preferences are widespread and variously described as open woods, thickets, roadsides, fence-rows and alluvial woods,

By 1974 it had become naturalized in 21 of the 33 states in which it is cultivated. It was naturalized north to central Maine, through New England, New York, Ohio and west to Iowa, south to Louisiana and Georgia. It was considered weedy in all of New England and most of the Atlantic Coast States by 1971. It is reasonable to assume the vine has expanded its North American range during the past thirty years.

In Connecticut, the earliest documented naturalized occurrence is by an herbarium specimen from 1916. The vine is currently present in all of the State's 169 towns.

Why is it a Problem?

The fast growing vine damages surrounding plants by climbing onto them and blanketing their leaves from sunlight. Its twining action constricts the host plant's stem, which can impede sap flow and weaken the stem. Dense infestations make the host plant top heavy and more prone to wind damage. It produces many fruit each year, and its seeds germinate at a high rate in full sun to partial shade. Thus many new plants originate every year. Oriental bittersweet also resprouts vigorously, especially when the top is damaged, and it is an aggressive competitor for space, sunlight, water and nutrients. It out competes many kinds of plants both in natural areas as well and maintained landscapes.

Management

Mechanical-

Very frequent mowing, such as weekly to maintain turf, will prevent bittersweet from becoming established and will eventually exhaust existing plants. Infrequent mowing or cutting will stimulate the root system of established plants to sucker and will produce many more stems. In new infestations, hand weeding of seedlings is effective. In situations with trees covered in vines, the vines should be cut off and the stumps treated with herbicide to prevent resprouting.

Fire

Controlled burning at Connecticut College has prevented fields and forest understories from becoming infested because young bittersweet plants do not survive the heat. There is no documentation of well established bittersweet patches being successfully controlled by burning.

Herbicides.

The surface of cut stems and stumps can be treated with a 25-50% solution of Roundup diluted in water to prevent resprouting.

Low growing infestations can be root-killed successfully with a foliar spray of a Garlon-containing herbicide (Garlon, Brush-B-Gone, Crossbow). Roundup does not root-kill bittersweet when applied to the foliage at label rates. Garlon has the additional advantage of not killing grasses, sedges and monocots in general, so the ground will not be completely denuded, as happens with Roundup. Crossbow also contains 2, 4-D and thus increases the effectiveness of the mixture on invasive exotics including Honeysuckles (*Lonicera* species) and Privet (*Ligustrum* species).

Glenn Dreyer, Director, Connecticut College Arboretum. Additional details may be found at <http://tncweeds.ucdavis.edu/esadocs/celaorbi.html>



Celastrus orbiculatus



Fall color



Close-up of Fruit



Fruit mass

